

#5
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: David S. Crocker
Serial No.: Unknown
Filed: Concurrently Herewith
For: Piloted Airblast Lean Direct Fuel Injector
Attorney's Docket No. N-6476
Customer No. 23456



INFORMATION DISCLOSURE STATEMENT

To the Honorable Commissioner
of Patents and Trademarks
Washington, D.C. 20231

Dear Sir:

Applicants and their attorneys are aware of the following documents which are relevant for the reasons indicated. Copies of the cited references are enclosed along with a Form PTO-1449 filed herewith.

1. A general summary of the various types of fuel injectors for gas turbine engines is shown in the text of Lefebvre, Gas Turbine Combustion (1983) at Chapter 10 thereof. Fig. 10.61 of the Lefebvre text discloses the basic design features of a piloted airblast atomizer, having a central pilot simplex pressure atomizer surrounded by a main airblast atomizer.

2. U.S. Patent No. 5,477,685 to Samuelson et al. discloses a lean burn injector utilizing a ring of radial injection ports, which inject fuel into a chamber where it mixes with swirling air.

3. U.S. Patent No. 5,505,045 to Lee et al. discloses a dual airblast injector having first and second concentrically located airblast injectors.

4. U.S. Patent No. 5,603,211 to Graves discloses an injector having an axial fuel injector surrounded by three swirlers having different swirl angles.

5. U.S. Patent No. 5,816,050 to Sjunnesson et al. discloses a low emission combustion chamber for gas turbine engines having an axial pilot fuel injector having an associated first flow swirler, and having a main fuel injector which injects into an annular chamber divided from the pilot fuel injector by a divider wall.

6. Smith, et al., Journal of Propulsion and Power, Vol. 11, No. 2, Mar-Apr 1995, "Dual-Spray Airblast Fuel Nozzle for Advanced Small Gas Turbine Combustors", p. 244-251, describes a dual airblast nozzle.

7. U.S. Patent No. 5,224,333 to Bretz et al. discloses a simplex airblast fuel injection system.

8. U.S. Patent No. 5,256,352 to Snyder discloses an air liquid mixer.

9. U.S. Patent No. 5,613,363 to Joshi et al. discloses an air fuel mixer for a gas turbine combustor.

10. U.S. Patent No. 5,987,889 to Graves et al. discloses a fuel injector for producing outer sure layer flame for combustion.

11. AIAA Paper No. AIAA-87-1826, 1987, entitled "Design and Test Verification of a Combustion System for an Advanced Turbo Fan Engine" by Sanborn et al. discusses piloted airblast nozzles.

Additionally, Applicant is aware of the following three references which are less than one year old. Applicant is citing the following references in the interest of complete disclosure, but Applicant does not concede any of the following references to

be prior art to the present invention. It is believed that if necessary, Applicants could swear behind these references.

12. SAME Paper No. 2000-GT-117 entitled "A New Hybrid Airblast Nozzle for Advanced Gas Turbine Combustors".

13. SAME Paper No. 2000-GT-0079 "Supression of Dynamic Combustion Instabilities by Passive and Active Means".

14. U.S. Patent No. 5,987,889 to Graves et al.

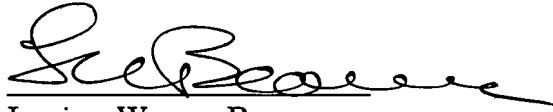
The Commissioner is authorized to charge any deficiency or credit any overpayment in connection with this Information Disclosure Statement to Deposit Account No. 23-0035.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "L. Beavers", is written over a horizontal line.

Lucian Wayne Beavers
Registration No. 28,183
WADDEY & PATTERSON
A Professional Corporation
414 Union Street, Suite 2020
Bank of America Plaza
Nashville, TN 37219
(615) 242-2400
ATTORNEY FOR APPLICANT

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Lucian Beavers', written over a horizontal line.

Lucian Wayne Beavers
Registration No. 28,183
WADDEY & PATTERSON
A Professional Corporation
Customer No. 23456

ATTORNEY FOR APPLICANT

This attorney is located at our Nashville, Tennessee office and can be contacted directly at:

Lucian Wayne Beavers
Waddey & Patterson
414 Union Street, Suite 2020
Bank of America Plaza
Nashville, TN 37219
(615) 242-2400